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BALD EAGLES KILLED BY TRAINS IN NEW YORK STATE

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High-speed passenger trains were first introduced into the Hudson River valley rail corridor in eastern New York State in 1980. As of October 2000, there were 20 train trips per day during daylight hours between Albany and New York City on a set of tracks along the eastern shore of the river. Over the same period, use of the lower Hudson River valley by nesting, migrating, or overwintering Bald Eagles (*Haliaeetus leucocephalus*) greatly increased. Sightings of Bald Eagles during annual January aerial surveys of the lower Hudson River have risen from none in the early 1980s to 28 in 2000 (Nye unpubl. data). These two developments have resulted in the deaths of Bald Eagles killed by high-speed trains. Between 1986 and October 2000, we examined the carcasses of 10 Bald Eagles apparently struck and killed by trains, eight in the last four years. At least eight of the incidents occurred on the Albany–New York City tracks in the mid-to-lower Hudson River valley. A ninth bird was recovered from the front of a high-speed locomotive which traveled this route, but which also traveled to and from Vermont during the period in question. The tenth eagle was killed along a railbed that parallels the western shore of Lake Champlain and supports high-speed train traffic to Montreal, Canada. Based on two reports by rail personnel, it is likely that one other eagle (an adult) was struck (presumed killed) in the lower Hudson River valley in August 1996.

Most of the train mortalities we examined occurred during periods of fall migration or overwintering in September (1 mortality), October (2), November (1), December (1), and January (3). The two exceptions were immatures killed in late June 1997 and late July 2000 Nine of the eagles were immatures (five female, three male, one unknown sex), and one was an adult male. All were in good nutritional condition except for one immature struck in September.

Analyses for organochlorine pesticides and polychlorinated biphenyls (PCBs) completed at Hazleton Labs, Madison, WI U.S.A.; EnChem, Inc., Madison WI U.S.A.; Illinois Animal Disease Laboratory, Centralia, IL U.S.A , and University of Mississippi, MS U.S.A. on various tissues from eight eagles (brain [4 birds], liver [3], subcutaneous fat [3]) did not reveal levels that might implicate them as predisposing factors in these train mortalities. DDE was detected in seven birds (0.02–0.73 ug/g in brain, 0.13–0.19 ug/g in liver, 1.4–3.73 ug/g in fat). PCBs were present in six birds (0.13–13.8 ug/g in brain, 0.45–4.3 ug/g in liver, 3.7–71 ug/g in fat). Highest levels were found in the immature from June 1997 supporting suspicions that it fledged from a nest near the PCB-contaminated Hudson River. Other organochlorines detected less frequently and at much lower levels included DDD

(max = 0.084 ug/g in brain, 0.023 ug/g in liver, and 1.2 ug/g in fat), DDT (max = 0.04 ug/g in brain, 0.52 in fat), and chlordane-related compounds (max = 0.92 ug/g cis-nonachlor in fat, 0.019 ug/g in liver).

Analyses for lead and mercury in the livers of seven of the eagles similarly excluded those contaminants as predisposing factors with the possible exception of an immature male that showed 23 ug/g mercury. This bird was in excellent nutritional condition, in contrast to what might be expected in an animal overtly intoxicated with mercury. Levels of mercury in the other six eagles ranged from 0.76–6.0 ug/g. Levels of lead (0.03–0.42 ug/g) were not notably elevated.

Rail hazards to wildlife have almost certainly been greatly increased by the newer high-speed passenger trains. Traveling at speeds up to 200 km/h, these trains are also remarkably quiet, further increasing the hazard. Eagles and other wildlife may have difficulty in effectively responding to objects moving at speeds greatly exceeding those ordinarily encountered in nature. Animals killed by trains attract scavengers that are subsequently imperiled. Two of the eagles in this report were observed standing near carrion before they flew into the path of the train, and it is likely that most of the others were struck in similar circumstances.

The preponderance of immature birds among the train casualties contrasts with the frequency of adults (63%, $N = 141$) observed during the January aerial surveys of the lower Hudson over the past 14 yr (Nye unpubl. data). This suggests that immatures are more vulnerable to this hazard, possibly because young eagles are more dependent on scavenging (Stalmaster 1987). Winter trapping efforts in the same region using deer or duck carcasses consistently attract more immatures (Nye unpubl. data). Young eagles may be further jeopardized by being both less wary and less agile than adult birds.

The significance of these train mortalities for eagles utilizing resources near these high-speed rail corridors is uncertain. The casualties reported here comprise 10 of 16 post fledged eagles examined from this part of New York State since 1986 (24% of 41 examined statewide). It has been suggested (Harmata pers. comm.) that high-speed trains, by providing a food base at critical periods (post fledging, first winter), might actually promote overall eagle survival and production despite causing occasional collision losses. At present, there are no data on amounts of carrion provided by the trains or use of the carrion by eagles that can be used to quantitatively evaluate this hypothesis. However, given the abundance and availability of fish in certain stretches of the lower Hudson River, the substantial amount of carrion linked to highway traffic in this region, and the frequency of collisions in relation to the number of eagles in this area, we suspect that the net effect of the high-speed trains is most likely to be decidedly negative. In any event, the greatest impact, positive or negative, will probably be on fledglings of local nesting pairs. Five nesting territories have become established in the lower Hudson River valley since 1992, and at least one of the train casualties was believed to have been a local juvenile.

The immediate proximity of this high-speed rail corridor to one of New York's most important eagle habitats suggests that the number of eagle-train collisions can be expected to increase if eagle use of the lower Hudson Valley continues to rise, or if there are further increases in train speed or trip frequency. As faster passenger trains appear to be expanding in both numbers and destinations nationwide, further investigation of their importance to Bald Eagles and other scavengers is warranted In the interim, ways to possibly reduce the hazards of these high-speed trains to scavengers, or to wildlife in general, should be explored. Carcass removal in certain locations and seasons might be beneficial, as might some sort of audible or visual signal that would scare avian scavengers well ahead of the train. Such signals might be more effectively located along the track than on the train itself.

RESUMEN.—La parte baja del Valle del Río Hudson ha crecido en importancia en las dos últimas décadas como sitio de invierno y de anidación de las águilas calvas (*Haliaetus leucocephalus*). Al mismo tiempo ha habido una introducción y expansión de los trenes rápidos de pasajeros en el corredor férreo a lo largo del Río Hudson. La introducción de trenes de alta velocidad ha estado acompañada de colisiones con águilas calvas. Entre 1986–2000, 10 águilas calvas fueron golpeadas y muertas por los trenes, ocho en los últimos cuatro años. Nueve de estas eran águilas juveniles. Estos accidentes representaron 10 de las 16 águilas emplumadas a las que se les practicó el postmortem y que pertenecían a esta región durante este período de tiempo. El aumento en el uso de trenes de alta velocidad a nivel nacional puede aumentar la mortalidad de águilas calvas y otras aves rapaces atraídas a la carroña ocasionada por los trenes.

[Traducción de César Márquez]

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